

What is claimed is:

1. A module for transferring a substrate comprising:
 - a load port for supporting a container to receive a plurality of substrates;
 - a substrate transfer chamber disposed between the load port and a substrate process module for processing the substrates;
 - a substrate transfer robot disposed in the substrate transfer chamber for transferring the substrates between the container and the substrate process module;
 - a gas supply unit connected to the substrate transfer chamber for supplying a purge gas into the substrate transfer chamber so as to purge an interior of the substrate transfer chamber; and
 - a contamination control unit connected to the substrate transfer chamber for circulating the purge gas supplied into the substrate transfer chamber, resupplying the circulated purge gas into the substrate transfer chamber and removing particles and airborne molecular contaminants from the purge gas being circulated.
2. The module as claimed in claim 1, wherein the container includes a front opening unified pod (FOUP).
3. The module as claimed in claim 2, further comprising a door opener for opening and closing a door of the FOUP.

4. The module as claimed in claim 1, wherein the gas supply unit includes:

a gas source for providing the purge gas;

a gas supply pipe for connecting the gas source and the substrate transfer chamber; and

a flow controller installed in the gas supply pipe for adjusting a flow rate of the purge gas being supplied into the substrate transfer chamber.

5. The module as claimed in claim 4, wherein the purge gas includes a nitrogen gas, and the gas source includes a storage container for storing the nitrogen gas and a purifier for purifying the nitrogen gas.

6. The module as claimed in claim 4, wherein the purge gas includes air, and the gas source includes a storage container for storing compressed air and a purifier for removing impurities contained in the air being supplied from the storage container.

7. The module as claimed in claim 6, wherein the purifier includes a molecular sieve purifier or a catalytic purifier.

8. The module as claimed in claim 1, wherein the contamination control unit includes:

a gas circular pipe connecting an upper portion and a lower portion of the substrate transfer chamber;

an air pump installed in the gas circular pipe for sucking the purge gas supplied into the substrate transfer chamber and circulating the sucked purge gas through the gas circular pipe;

a filtering part installed in the gas circular pipe for removing the particles and the airborne molecular contaminants contained in the purge gas being circulated; and

a flow controller installed in the gas circular pipe for controlling a flow rate of the purge gas being circulated.

9. The module as claimed in claim 8, wherein the contamination control unit further includes a gas exhaust pipe connected to the gas circular pipe for exhausting the purge gas being circulated and a valve installed in the gas exhaust pipe for opening and closing the gas exhaust pipe.

10. The module as claimed in claim 8, wherein the contamination control unit further includes a valve installed in the gas circular pipe between the lower portion of the substrate transfer chamber and the air pump for opening and closing the gas circular pipe.

11. The module as claimed in claim 8, wherein the filtering part includes:

a particle filter for removing the particles contained in the purge gas being circulated;

a moisture purifier for removing moisture contained in the purge gas being circulated; and

an organic contaminant filter for removing organic contaminants contained in the purge gas being circulated.

12. The module as claimed in claim 11, wherein the moisture purifier is a molecular sieve moisture purifier.

13. The module as claimed in claim 11, wherein the organic contaminant filter is an activated carbon filter.

14. The module as claimed in claim 1, further comprising:
a distribution panel horizontally disposed in the substrate transfer chamber, the distribution panel having a plurality of holes for uniformly supplying the purge gas into the substrate transfer chamber; and
a particle filter disposed between the distribution panel and the substrate transfer robot for removing particles contained in the purge gas being supplied through the holes of the distribution panel.

15. The module as claimed in claim 14, further comprising an ionizer disposed between the distribution panel and the particle filter for removing static electricity from the substrates.

16. The module as claimed in claim 14, wherein the purge gas is an inert gas.

17. The module as claimed in claim 16, wherein the inert gas is a nitrogen gas.

18. The module as claimed in claim 14, wherein the purge gas is purified air.

19. The module as claimed in claim 18, further comprising:
a photo catalyst filter disposed between the distribution panel and the particle filter for removing organic contaminants contained in the purge gas being supplied into the substrate transfer chamber; and
an ultraviolet lamp for applying ultraviolet rays onto the photo catalyst filter.

20. The module as claimed in claim 19, further comprising an ozone filter disposed between the photo catalyst filter and the particle filter for removing ozone contained in the purge gas being supplied into the substrate transfer chamber.

21. The module as claimed in claim 1, further comprising:

a differential pressure sensor connected to the substrate transfer chamber for measuring a differential pressure between an internal pressure and an external pressure of the substrate transfer chamber; and

a control unit for comparing the differential pressure measured by the differential pressure sensor with a predetermined differential pressure, and for adjusting a flow rate of the purge gas being supplied into the substrate transfer chamber and a flow rate of the purge gas being circulated through the contamination control unit in accordance with a comparison result.

22. The module as claimed in claim 1, further comprising a perforated panel disposed above a bottom panel of the substrate transfer chamber for passing the purge gas supplied into the substrate transfer chamber therethrough, wherein the perforated panel has a plurality of holes, and the contamination control unit is connected to the bottom panel of the substrate transfer chamber.